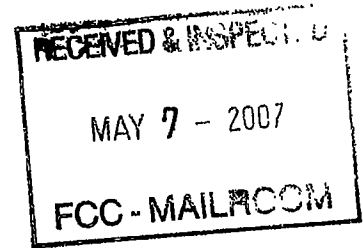**Federal Communication Commission – Rural Health Care Pilot Program**
WC Docket No. 02-06
State: North Dakota

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Senator Kent Conrad
Department of Family and Community Medicine (UNDSMHS)
Neuropsychiatric Research Institute
Department of Clinical Neuroscience
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INTRODUCTION

The University of North Dakota, School of Medicine and Health Sciences (UNDSMHS), Center for Rural Health will serve as the lead applicant and will be legally and financially responsible for the conduct of activities supported by the FCC funds for this proposal. The Center will work in partnership with the, UNDSMHS Computer Services.

FCC Rural Pilot Program - Development Process:

Upon the announcement in September, 2006 of the FCC Rural Health Care Pilot Program, the Project Director at the Center for Rural Health(CRH), University of North Dakota, School of Medicine Health Sciences(UNDSMHS), immediately initiated a series of statewide electronic forums utilizing phone and video conferencing in an attempt to determine the most urgent communication needs of the health care providers in the state and to solicit ideas on how the FCC Pilot Program might best meet their needs.

Many health care providers as well as other parties such as the North Dakota Healthcare (hospital) Association, North Dakota Department of Health and the North Dakota State University(NDSU), College of Pharmacy (tele-pharmacy program) participated in the conferences. During the ensuing discussions, three things quickly became clear: 1) communication needs were very diverse and those needs were largely determined by the current progress that a health care provider has made in moving to an electronic or telehealth format; 2) There was very little understanding of how or why Internet-2 or the National LambdaRail might be utilized in healthcare delivery and very little experience or interest in either because of previous limitations on their use for commercial purposes; 3) There was no existing infrastructure in the state for delivering either Internet-2 or LambdaRail to commercial customers but rather only to universities, schools and state agencies on whose network non-state, commercial business is prohibited.

In order to discover and then examine the possible options that might be open for using the Internet-2 and National LambdaRail for telehealth applications, technology networking experts from all over North Dakota were asked to join subsequent conference calls. Those experts represented North Dakota's Information Technology Division, the NDSU and UND Information Systems divisions, the North Dakota University Systems Intenet-2 experts and additional outside consultants.

The networking expertise was impressive, the discussions were fruitful in terms of discovering ways that one of the nationwide backbone's services to rural areas could be beneficial. However, after countless discussions and even examination of enhancing the state's existing videoconferencing network for bioterrorism emergencies (BT-WAN), each implementation was determined to be impractical at this point.

Two of the biggest stumbling blocks were the existence of medium-speed, inexpensive and reliable broadband circuits that are already available in the state and the 15% match which can be significant to rural health care providers that are already struggling with a financial crisis. The expenditure of scarce funds for untried new technology was not appealing at this time.

The UNDSMHS then turned its focus inwards to examine the possibilities of developing a research and testing environment that might allow for developing and proving telehealth applications on a high-speed network and a nationwide backbone service at real health care facilities and on projects they want and need.

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After close examination of funds that the UNDSMHS is already spending for communications between its campuses *and Rural Opportunities in Medicine (ROME)* sites and through close collaboration with *the North Dakota Information Technology Division, a plan was devised that would allow combining* existing UNDSMHS funds with the FCC's generous 85% match to significantly enhance the UNDSMHS's network architecture.

With this new enhanced network, titled the *Health Care Research and Education Network(HCREN)* we will increase our ability to connect more health care professionals as teachers from all over North Dakota as well as our gifted researchers to the existing infrastructure we already use to disseminate healthcare education to communities all around the state.

The existing infrastructure we now utilize to broadcast such interactive health care education includes the videoconferencing bridge (Codian Multipoint Conference Unit) in Park River, the 40+ H.323 sites we administer around the state, the BT-WAN video network reaching all 42 hospitals around the state, North Dakota IVN, the North Dakota Health Care Review's Quality Improvement network at long-term care sites around North Dakota and the states telehealth networks in Bismarck and Fargo.

HCREN will also have the capacity to test new telehealth applications in order to determine their network requirements and it will allow our researchers to evaluate the efficacy of telemedicine as a treatment option in rural areas.

ABSTRACT

The Center for Rural Health (CRH) was established in 1980 and is located within the University of North Dakota School of Medicine and Health Sciences (UNDSMHS). CRH is serving as the lead applicant for the FCC Rural Health Care Pilot Program. The CRH serves as a focal point for rural health in North Dakota. As the federally designated State Office of Rural Health for the state, the Center connects the School of Medicine and Health Sciences and the university to rural communities and their health care institutions to facilitate the development and maintenance of the rural health delivery systems.

UNDSMHS, one of 126 medical schools in the U.S. and Canada, was established in 1905 and is fully accredited by the Liaison Committee on Medical Education. It is one of 22 "community-based" medical schools in the United States. "Community-based" means that the school is integrated into the medical system of communities where practicing physicians serve as members of the school's faculty. Physicians teach medical students in hospitals, clinics and other settings in about 30 communities throughout North Dakota. The school is administered through four regional "campuses," based in Fargo (91,240 pop.), Bismarck (56,234), Minot (36,256), and Grand Forks (48,546), which represent the four quadrants (NW, NE, SE, SW) of the state.

ND demographics: In 2000 North Dakota's resident census population was 642,200, which ranked 47th in the nation. North Dakota has four metropolitan counties, all of which have rural census tracts. The state's population density is 9.2 people per square mile, and **68 percent of the counties are classified as frontier.** Part or all of **83 percent of the counties in the state are designated as Health Professional Shortage Areas (HPSA), and 94 percent are designated as Mental Health Shortage Areas.**

Proposed Pilot Project: The Center for Rural Health, working in partnership with UNDSMHS Computer Services is proposing to construct a high-speed data network, the **Health Care Research & Education Network (HCREN),** that will connect the UNDSMHS's four main campus sites (Bismarck, Minot, Fargo, Grand Forks) and its own clinical medical sites to rural health care facilities (Jamestown, Dickinson, Williston, Hettinger, Devils Lake) in North Dakota. These hospitals have been chosen for this pilot program because they serve as sites for the *Rural Opportunities in Medicine* (ROME) program, which is a seven month interdisciplinary experience in a rural primary care setting, open to third-year medical students at the UNDSMHS and also serves students in the *Student/Resident Experiences and Rotations in Community Health* (SEARCH) program. This program offers a rural practice opportunity for students who have completed one year of training in the following: medicine, primary care, nurse practitioner, physician assistant, graduate social work and dentistry.

This enhanced high-speed HCREN will be utilized to: 1) address the healthcare workforce shortage issues by - providing a link to improve educational opportunities to students in health care professional training programs; providing continuing education for existing health care professionals and to pilot a possible solution to the documented shortage of mental health services in the state; **2) promote health care research -** by facilitating new as well as ongoing research in health care delivery to rural areas; by facilitating pilot projects that will monitor the use of this high-speed network when implementing an electronic medical record as well as other technology applications. The results will be shared with other rural health care facilities which will help to inform their decisions as they adopt HIT to improve the quality of health care delivery; **3) enhance health care education to rural and medically underserved areas-** by broadening the pool of possible topics/presenters to also include the health care professionals on the ROME campuses and UNDSMHS research programs. In addition, the UNDSMHS will **commission a Design Study to examine the feasibility of providing both fiber and Internet-2 capabilities** similar to those that prove efficient in HCREN pilot projects **to the 34 rural hospitals** in the state that are not a part of this pilot project.

UNDSMHS is **requesting a total of $286,144** to support 85% of the costs required to construct the network; to support re-occurring costs to maintain the data lines for a period of two years; to provide the network with connections to Internet-2*(The National LambdaRail is not available in North Dakota at this time.);* to commission a Design Study.

BACKGROUND

North Dakota State Summary:
In 2000 North Dakota's resident census population was 642,200, which ranked 47th in the nation. The male population was 320,524 and the female population was 321,676. Seventy-five percent of the population was 18 years and older with a median age of 36.2 years.

Of all United States, North Dakota (ND) is the most rural, with farms covering more than 90 percent of the land. North Dakota has four metropolitan counties, all of which have rural census tracts. The state's population density is 9.2 people per square mile, and **68 percent of the counties are classified as frontier** (federal definition of six or less people per square mile). In the 2000 census, North Dakota had the smallest population increase (0.5 percent), and the population has decreased 1.3 percent since 2000.

According to the 2000 census, 42 of North Dakota's 53 counties had population with 30 percent or more of residents living at or below 200 percent of the Federal Poverty Level (FPL). Part or all of **83 percent of the counties in the state are designated as Health Professional Shortage Areas (HPSA), and 94 percent are designated as mental health shortage areas.** A 2004 HRSA state planning grant survey found that 8.0 percent of the ND population is uninsured and 8.2 percent is underinsured. The uninsured are mostly young (15.9 percent), working (71.7 percent), and poor (70 percent of the uninsured have incomes less than 200 percent of the FPL).

American Indians (AI) are the largest minority group (five percent of total population) in ND. While the overall state population has declined, the American Indian population has increased by 22 percent. American Indians reported being uninsured at 37.1 percent. This population also has the greatest health disparities. North Dakota's American Indian population is 1.5 times as likely to die of heart disease, cancer, stroke, and influenza/pneumonia as the white population. In addition, American Indians are 6 times as likely to die from diabetes, 10 times as likely to die of cirrhosis, and 13 times as likely to die of homicide[1].

The University of North Dakota School of Medicine and Health Sciences (UNDSMHS)
UNDSMHS, one of 126 medical schools in the U.S. and Canada, was established in 1905 and is fully accredited by the Liaison Committee on Medical Education. It is one of 22 "community-based" medical schools in the United States. "Community-based" means that the school is integrated into the medical system of communities where practicing physicians serve as members of the school's faculty. Physicians teach medical students in hospitals, clinics and other settings in about 30 communities throughout North Dakota, although the majority of training occurs in the state's four largest cities.

The school is administered through four regional "campuses," based in Fargo (91,240 pop.), Bismarck (56,234), Minot (36,256), and Grand Forks (48,546), which represent the four quadrants (NW, NE, SE, SW) of the state. Through this structure, education and training of undergraduate medical students and residents is coordinated and supervised. Practicing physicians on each campus serve as teachers, providing a broad spectrum of experience while caring for patients in hospitals, clinics, physicians' offices, nursing homes and other community health care facilities. Community resources for medical care services - such as mental health centers, alcoholic treatment units, public health clinics - also are utilized in the education programs. In addition to community hospitals, UND medical school-affiliated

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[1] North Dakota Vital Statistics Reports 1985-2000

teaching hospitals include the Veterans Administration (VA) Medical Center in Fargo and U.S. Air Force Base hospitals in Minot and Grand Forks.

The school is routinely recognized by national organizations for leadership in rural medicine and the high proportion of graduates who choose to enter a primary care specialty. The school has been cited many times by the American Academy of Family Physicians for the high percentage of its M.D. graduates who choose to enter training in family medicine, practitioners whom are desperately needed in rural North Dakota. Today, about 45 percent of practicing physicians in the state have received some or all of their training through the UND medical school. In the past 30 years, the number of North Dakota physicians has increased nearly threefold, to about 1500, and the sophistication of medical services, procedures and surgeries has increased dramatically, allowing patients to remain in-state. However, the issue remains one of geographical distribution with shortages in with shortages in rural North Dakota.

UNDMSHS research is conducted in areas such as alcoholism in women, anorexia and other eating disorders, cancer, diabetes, diseases of metabolism, myopia (nearsightedness), multiple sclerosis and Parkinson's disease, among many investigations concerning human health. A Center of Excellence in Neuroscience has recently been established.

In addition to medical education, UNDSMHS also offers graduate education leading to the master's and/or doctoral degree in anatomy and cell biology; biochemistry and molecular biology; microbiology and immunology; pharmacology, physiology and therapeutics; clinical laboratory science, and physical therapy. It offers undergraduate degrees in athletic training, clinical laboratory science and occupational therapy. The school admits experienced, professional nurses to a master's degree program which prepares them to become physician assistants. Many of the graduates from these programs have remained in North Dakota.

Center for Rural Health

The Center for Rural Health (CRH) was established in 1980 and operates within UNDSMHS and has as its mission to connect resources and knowledge to strengthen the health of people in rural communities. CRH serves the people of the state, region and nation. As a resource, CRH staff members identify and research rural health issues, analyze health policy, strengthen local capabilities, develop community-based alternatives, and advocate for rural concerns.

The CRH serves as a focal point for rural health in North Dakota. As the federally designated State Office of Rural Health for the state, the Center connects the School of Medicine and Health Sciences and the university to rural communities and their health care institutions to facilitate the development and maintenance of the rural health delivery systems. In this capacity, the CRH staff works at the national, regional, state and community level

Although many specific activities constitute the agenda of the CRH, seven core areas serve as the focus:

1. **Education, Training, and Resource Awareness** – The Center is a resource for educational programs (i.e. quality and patient Safety; CMS updates; public health topics; health Information technology; grant writing) that incorporates rural health content. Educational efforts extend beyond the campus through continuing professional, consumer and policymaker education on selected topics.

2. **Community Development and Technical Assistance** - Active assistance is provided to rural health care providers, communities, associations, groups and states developing viable solutions to health care delivery problems.

3. *Rural Health Research - Most of the Center's rural research can be grouped into three categories:* health policy, health systems, and health personnel. Research efforts focus on helping to identify solutions to long-term problems surrounding rural health care delivery.

4. **Rural Health Policy** - The impact of public policies on rural health care is evaluated and information is used to inform policy decisions at the local, state and federal level.

5. **Rural Health Workforce** – Direct assistance is provided to rural communities and health organizations on their workforce issues (e.g., access to state and federal loan repayment, National Health Service Corps, interdisciplinary training, etc.) and the Center works closely with both private and public sources at the national and federal level.

6. **Native American Health** – The Center is a resource for Native American aging subjects and issues working with tribal governments throughout the country. Within North Dakota active assistance is provided to tribal entities on the following: identifying funding sources; needs assessment analysis; interdisciplinary training; work force development; mental health, and other areas. The Center is home to the National Resource Center on Native American Aging.

7. **Program Evaluation** - A strong feature of the CRH is its ability to evaluate the effectiveness of programs both at the process and outcome levels. Evaluation expertise lies in both quantitative and qualitative measures.

The CRH was designated (2004) as one of three Centers of Excellence in Research, Scholarship and Creative Activity by the University of North Dakota based on its record of service through outreach to communities, rural health services research, and strong partnerships with multiple programs across local, state, tribal, and federal government. The CRH's commitment to strengthening North Dakota's rural and frontier health care system is based on the recognition that access to quality health care is essential to the viability of rural and frontier communities in North Dakota.

The Center's activities related to each of the seven focal areas are critical to adequately sustaining private sector positions in health care. For example, the Center facilitates network development to achieve economies of scale across rural health care systems and conducts studies to better understand and plan for health workforce demand. This investment in reshaping rural health systems and restructuring community dynamics is essential to strengthening the foundation for rural community survival and statewide growth.

The CRH's efforts assist in building and promoting the viability and capacity of North Dakota's rural communities in a number of ways. To illustrate, the CRH provides direct technical assistance to members of rural health care facilities. By working with rural health systems to maintain and sustain their viability, the CRH not only assists in addressing health care access issues, but contributes to rural economic preservation and development.

For example, the CRH's Rural Hospital Flexibility program has helped North Dakota's 31 Critical Access Hospitals (CAHs) to continue to provide approximately 3,900 jobs (primary and secondary employment) in rural North Dakota. These rural hospitals have a primary and secondary payroll impact of over $90 million (Gibbens, 2005). Through direct technical assistance (e.g., grant development, health professional recruitment/retention, health system development), the CRH provides public sector support and infrastructure development to private sector enterprises.

The second capacity-leveraging factor is associated with technology development. The Center works with rural hospitals, clinics, and other health care businesses (e.g., rural pharmacies) in grant

development to build new or expand existing technology for the benefit of rural patients. The Telehealth Network grants, the Rural Utilities Services Distance Learning grants, and the Universal Service Fund have benefited rural providers. The CRH has worked with all three programs to assist North Dakota's rural and frontier communities in improving access to and quality of local health care services.

The CRH is also recognized by national organizations and the federal government as a leader in rural health and rural community development. It has influenced the efforts of states across the country by developing innovative models for community development and local health system reform. In addition, the CRH is nationally recognized for its efforts to craft health policy-relevant research projects that are directly applicable to rural communities and providers. For example, the national reputation of the Center is acknowledged through federal support of its National Resource Center on Native American Aging which provides technical assistance and research to over 170 American Indian tribes across the nation. Also, through the U.S. Department of Health and Human Services' Agenda for Rural America initiative, the CRH's Rural Assistance Center (RAC) was designated to serve as the nation's clearinghouse for information on rural health and human services. Since its inception in 2002, RAC has been accessed by more than 148,000 information-seekers.

UNDSMHS Health Care Education - Outreach Programs
Rural Opportunities in Medicine (ROME)
ROME is a seven month interdisciplinary experience in a rural primary care setting, open to third-year medical students at the University of North Dakota School of Medicine and Health Sciences. Students live and train in non-metropolitan communities under the supervision of physician preceptors. ROME students experience health care delivery in rural areas throughout the state of North Dakota, where providing access to health care is sometimes challenging. Students learn about problems commonly encountered in primary care, from routine health maintenance to medical emergencies and rare and unusual diagnosis. Each primary preceptor is board-certified in family medicine, but students also have the opportunity to work with board-certified surgeons, internists, pediatricians, and other specialists available in the community.

The ROME sites have been selected as key pilot nodes in the purposed HCREN network.

Student/Resident Experiences and Rotations in Community Health (SEARCH) Program
The Center for Rural Health coordinates the National Health Service Corps (NHSC), *Student/Resident Experiences and Rotations in Community Health (SEARCH)* program. This is a program that offers an opportunity for students who have completed one year of training in the following programs: medicine, primary care, nurse practitioner, physician assistant, graduate social work and dentistry. Exposing health care professional students to rural practice early in their training can dispel myths associated with rural practice. Students participate in the SEARCH program which is a four week summer rotation or a clinical field placement to learn about the role and function of interdisciplinary health care teams in rural areas. Community-based clinical focus provides students their first exposure to the rural setting which provides a very different atmosphere from the academic environment.

SEARCH is funded by the U.S. Department of Health and Human Services, Public Health Service, Health Resources and Service Administration, Bureau of Primary Health Care.

PROJECT DESCRIPTION

The University of North Dakota School of Medicine and Health Sciences (UNDSMHS) Center for Rural Health is proposing construction of a high-speed data network, *Health Care Research & Education Network (HCREN)*, to connect the UNDSMHS's four main campus sites and its own clinical medical sites to several rural health care facilities in North Dakota. It also proposes to commission a Design Study that will determine the feasibility and cost of providing fiber access and Internet-2 connectivity to each of the 39 rural hospitals in North Dakota.

Funding is being requested from the FCC Rural Health Care Pilot Program for:

 ➢ 85% of the costs required to construct this network
 ➢ 85% of re-occurring costs to maintain the data lines
 ➢ 85% of costs required to provide the network with connections to Internet-2
   (The National LambdaRail is not available in North Dakota at this time.) *Please note that each of the connections being specified is the fastest Stagenet connection available for each site at this time, and all Stagenet connections have Internet-2 connectivity.*
 ➢ 85% of the cost of a Design Study that will examine the feasibility of providing both fiber and Internet-2 capabilities to all 39 rural hospitals in the state.

Proposed Health Care Research & Education Network (HCREN)

The Current UNDSMHS Network Infrastructure:
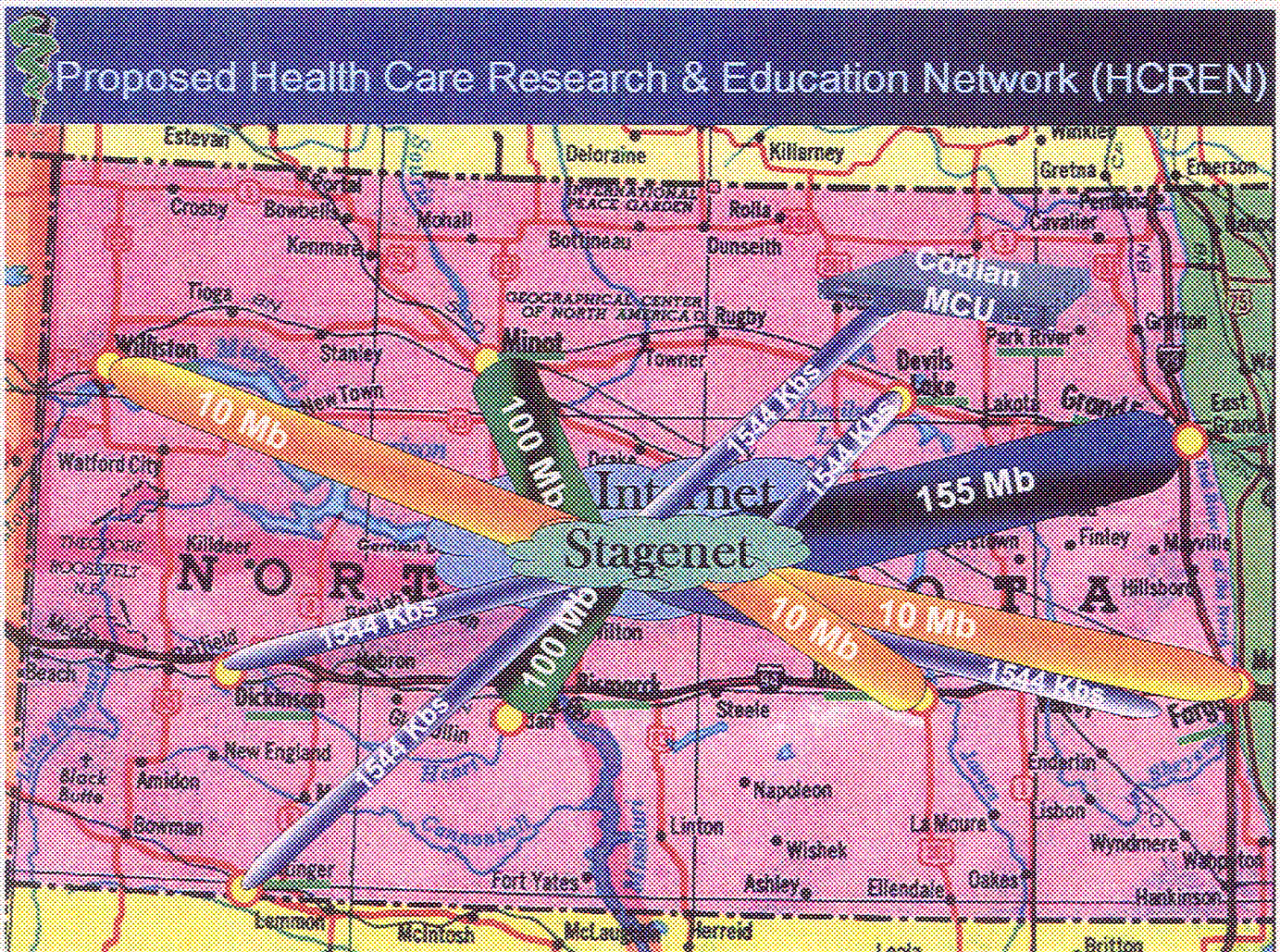
A conceptual depiction of the UNDSMHS current network resources is presented below. It should be noted that connections from the Bismarck, Fargo, Grand Forks and Minot campus sites are made into Stagenet but the connections from the ROME hospitals are being made to the commercial Internet through DSL lines and local Internet Service Providers.

Also of note:

The Dickinson ROME site is scheduled to receive medical students for the first time in the fall of 2007 so an Internet connection to the Dickinson hospital has yet to be made.

Stagenet has a 1200Mb connection to the commercial Internet and a 100 Mb connection to Internet-2. Stagenet provides Internet-2 services to all of its endpoints.

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Overview of North Dakota's IT Infrastructure

As a state institution, the UNDSMHS is obligated by law as stated in the North Dakota Century Code Section 54-59-08 to use North Dakota's Information Technology Department (ITD) for wide area network services.
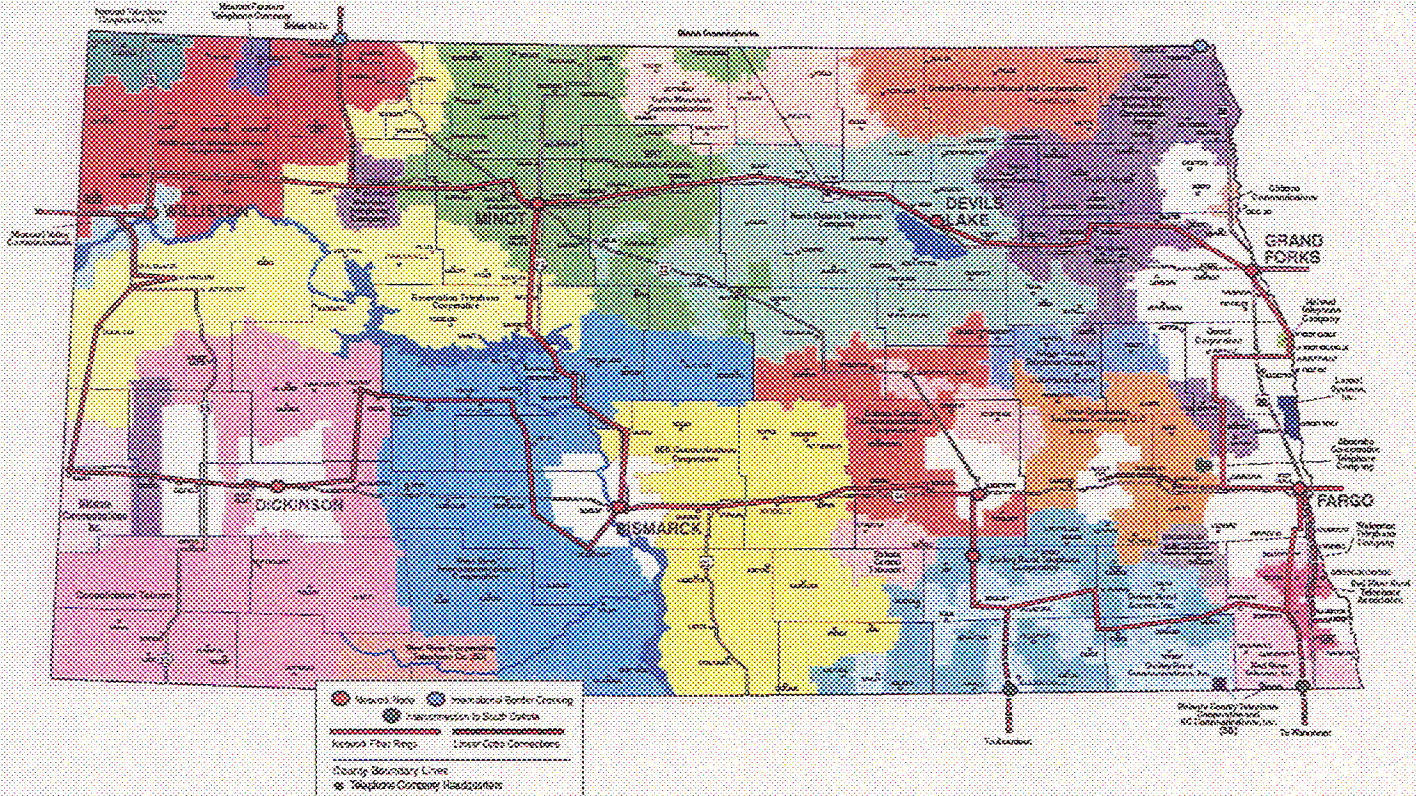
ITD runs a virtual private network on a system leased from Dakota Carrier Network (DCN). DCN was formed by 15 independent rural telecommunications companies that together represent 85% of all of the telephone exchanges in North Dakota and serve more than 90% of the total surface area in the state.

Dakota Carrier Network operates a 100-percent fiber Synchronous Optical NETwork (SONET) ring communications network with backbone operating at 2.488 Gbps to link all regions of the state, including all of the major population centers.

ITD is using a Resilient Packet Ring (RPR) network as the backbone for the state of North Dakota. This is a highly reliable high-speed network that also employs Dense Wavelength Division Multiplexing (DWDM) to create paths on existing fiber having 72 wavelengths each capable of carrying 10 Gbs.

Internet-2 capabilities are an integral part of all Stagenet connections.

Goals and Objectives of the Proposed Health, Education and Research Network (HCREN)

Goal 1

Facilitate the assessment of the band-with utilization for the pilot project sites to determine the most appropriate use of high-speed network technologies to improve health care delivery and health care education to rural and medically underserved areas.

Objective -1:

The UNDSMHS will employ the services of North Dakota's Information Services Division (ITD) to deploy the highest speed StageNet Internet Connections locally available to the sites listed below.

The following sites will be connected.
The maximum bandwidths currently possible are:

Rural Sites	Proposed Bandwidth	Current
West River Medical Center, Hettinger	1.544 Mbs	256 K
Mercy Hospital, Williston	10 Mbs	256 K
St. Josephs Hospital, Dickinson	1.544 Mbs	none
Jamestown Hospital, Jamestown	10 Mbs	256 K
Mercy Hospital, Devils Lake	1.544 Mbs	256 K
The UNDSMHS Codian MCU in Park River[2]	1.544 Mbs	none

UNDSMHS Sites		
Grand Forks Campus	155 Mbs	155 Mbs
Grand Forks Altru Hospital	155 Mbs	155 Mbs
Bismarck Campus & Center for Family Medicine	100 Mbs	10 Mbs
Minot Campus & Center for Family Medicine	100 Mbs	10 Mbs
Fargo Campus	10 Mbs	1.5 Mbs
Neuropsychiatric Research Center in Fargo	10 Mbs	none

[1]*StageNet (Statewide Technology Access for Government and Education network) was established by North Dakota legislative action in 1999 to provide "broadband connectivity, Internet access, video conferencing and other networking services. All state agencies, colleges and universities, local government, and K-12 are required to participate in STAGEnet. "*

ITD "is responsible for all wide area network services planning, selection, and implementation for all state agencies"

[2]*The UNDSMHS houses a Codian Multipoint Conferencing Unit (A Video Bridge to allow multiple H.323 endpoints in a videoconference) in the Park River Polar Telecommunications Network Operations Center to take advantage of the 180 Mbs connection they have there to the commercial Internet. Polar sees their peek usage on their links during the evening hours and our peek usage occurs during the work day, so we have a very useful and affordable synergy. A Stagenet connection on port- two of that MCU will allow very high-speed videoconferences to be bridged between endpoints on Internet-1, Stagenet and Internet-2 through that video bridging device.*

Objective - 2:

The UNDSMHS will utilize the HCREN for current research (listed below) and new research in health care delivery. It is expected that such adoption will greatly accelerate the ability to bring the latest in contemporary treatment options to rural areas with the potential of attracting additional participatory research from the rural sites.

Currently the UNDSMHS is implementing a number of medical research efforts that can be strengthened by the HCREN.

Current clinical[3] research at UNDSMHS:
NORTHSTAR, a recently funded practice-based research network at UNDSMHS. NORTHSTAR will focus on quality improvement in rural practice, **conducting best-practice research** and identifying and testing new methods of health care delivery in the rural setting. The overall goals of this project are to improve quality of care in the rural primary care setting, and to create a community of learning for rural providers.
*The *Neuropsychiatric Research Institute's* has been doing long-term research into the **remote delivery of cognitive behavioral therapy** (CBT) via telemedicine for **treatment of bulimia nervosa in rural areas** where specialized treatments are usually not available. There appears to be a growing discrepancy between what is being used experimentally in academic centers and recommended by researchers in the field (e.g., cognitive behavioral therapy (CBT), and what is actually available in the community. Although this deficiency might be remedied through the development of training programs to improve therapists skills in this area, such programs would be difficult to administer logistically, and it is unlikely that most practitioners would have the time or financial resources to undertake such training. A randomized trial has recently been completed, comparing CBT delivered via telemedicine to CBT delivered in person in rural and smaller urban areas in North Dakota and northwestern Minnesota. The two treatments were equally effective and acceptable to patients, with good maintenance of treatment effects at 1-year follow-up.
From the UNDSMHS Department of Neuroscience: The Northern Plains Trauma Consortium will train North Dakota clinicians in a variety of evidence based **mental health interventions for traumatized children**. Specifically, the consortium will work to disseminate two treatments (i.e., Trauma Focused Cognitive Behavior Therapy, Structured Psychotherapy for Adolescents Residing in Chronic Stress) to North Dakota clinicians. Telehealth technology will be utilized to deliver supervision and actual interventions for children in **extremely rural settings.**
*The UNDSMHS Department of Neuroscience also has an internationally renowned research group that has been **studying women's drinking** since 1980. The project started by studying women in the United States, and over the last 20+ years has expanded to study drinking habits in 40 countries. Several projects including Gender, Alcohol and Culture: An International Study (GENACIS) would very likely be well served by the high-speed performance that is characteristic of Internet 2 connections from the U.S. to international sites. Readers may learn more about this research at: http://www.med.und.nodak.edu/depts/irgga/
Family and Community Medicine Clinical Research Project for 3rd year medical students. The third-year research project is a collaborative effort by faculty from the Departments of Family and Community Medicine and Department of Internal Medicine. The objective of this project is to develop an understanding of research while utilizing the supervision and support of faculty from the Department of Family and Community Medicine and Department of Internal Medicine. All 3rd year medical students including the **ROME students are required to participate in this with a clinical research project.**

[3] *This list of research projects is most certainly not exhaustive nor is it a complete list of research done at UNDSMHS. Interested readers may learn more about other research done at UNDSMHS by visiting: http://smhs.med.und.nodak.edu/UNDSMHS/research.html*

Objective - 3:
The UNDSMHS will work with the five pilot hospitals to monitor the band-with utilization for various *electronic applications (i.e. clinical medicine, telemedicine,* healthcare education and aspects of electronic medical records) that utilize the HCREN.

Based on the HIT (2005) Survey conducted by the North Dakota Health Care Review, Inc., the Medicare Quality Improvement Organization (QIO) for North Dakota, rural health care providers across North Dakota are struggling with the issues of implementing health information technology (i.e. electronic health records(EHR), picture archival and communications systems (PACS), laboratory information systems, etc.) and other technology applications which is being encouraged by the federal government. For example, of the statewide hospital responses, only 30% of hospital clinics indicated they use an EHR, and another 15-20% plan to implement in the next two years; and of the Critical Access Hospitals (CAH) that responded, about 25% use an EHR, and just under 10% plan to implement in the next two years.

With regard to barriers to implementing EHR, the statewide results reported over 90% of hospitals cited lack of financial resources as a barrier slowing or preventing implementation of an EHR in their organization. Other frequently cited barriers were availability of well-trained staff (40%), difficulty in justifying expense/determining return on investment (40%), and difficulty in achieving physician acceptance/use (28%).

In addition, lack of knowledge of just how much bandwidth is needed and what kind of network is required for each of the electronic applications that make up an electronic medical record system makes their efforts significantly more difficult and increases the potential of making very expensive mistakes. With the HCREN, we intend to offer the providers a tool to test the band-width issues in order to determine the most efficient and cost-effective solution.

Objective - 4:
The UNDSMHS will assist the hospitals and healthcare providers, in this rural pilot program to test the HCREN's Internet-2 capabilities as an "electronic healthcare information commons" where providers can meet at high network speeds with reasonable assurance of network compatibility. It is anticipated that this will prove to be a solution to incompatibility issues between various electronic networks that serve health care in the new electronic information age.

The UNDSMHS will also offer to extend its Inernet-2 Participant Agreement to include sponsorship of North Dakota healthcare providers not listed above but who are actively involved in training medical and allied health students. The costs, if any, resulting from such Internet-2 connections will be the responsibility of the healthcare provider.

Goal 2
Utilize the HCREN to broaden the educational opportunities to students in health care professions and health care providers in the state.

Addressing healthcare professional education and health care workforce shortages are fundamental to the purpose of HCREN. When fully implemented, this program will assist the UNDSMHS not only with academic research and educational goals but also provide the medical students the chance to practice in a rural setting where those rural practice sites have state-of-the-art technology. In order to address the rural workforce shortages, a new generation of physicians and other allied health care

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professionals require the assurance that latest technology is available.

Objective - 1:

The UNDSMHS will utilize HCREN's high-speed capabilities to originate health care training via videoconferencing from rural sites as well as from the four main campus sites that are now used for program origination. Such educational events would most certainly include but not be limited to current offerings such as Surgery Grand Rounds, Surgery Morbidity and Mortality conferences, Psychiatric Grand Rounds, the UNDSMHS Grand Rounds, Medical School for the Public and the Dean's Hour (in-house medical education).

Having higher bandwidths available at the rural ROME sites will allow us to tap into the knowledge and expertise of our faculty at those sites and allow them to share that knowledge with students, colleagues and peer healthcare providers all over North Dakota.

The UNDSMHS already has very sophisticated technologies available that allow program dissemination to nearly every health care provider in the state, and HCREN will *serve to significantly increase the number of locations* that such programming can emanate from.

Goal 3
Commission a Design Study to determine the cost and feasibility of providing fiber access and Internet-2 connectivity for all 34 rural hospitals in North Dakota.

Objective - 1: Assess the available communication options and the most cost-effective method to provide Internet-2 capabilities for each of the 34 rural North Dakota hospitals that are not a part of the proposed pilot project. Where needed, construction costs for implementing a fiber infrastructure will also be sought.

This study will be commissioned during the second year of the project to allow the design of the study to benefit from the collection and analysis of data from the HCREN sites during the first year of operation.

The UNDSMHS will provide 15% of the cost of this study.

Objective - 2:
The UNDSMHS Center for Rural Health will provide the results from the Design Study to the *North Dakota Statewide HIT Steering Committee* to inform the development of the State HIT Roadmap.

Goal 4
Facilitate communication to share lessens learned from the operation of the HCREN.

Objective - 1:
The UNDSMHS Center for Rural Health and Computer Services will coordinate quarterly videoconferences between the five ROME sites and the UNDSMHS sites using the HCREN to provide opportunities to share progress and trouble shoot.

Objective 2:
The UNDSMHS Center for Rural Health and Computer Services will coordinate two electronic forums annually to share information gleaned from research on the HCREN and to solicit suggested direction for additional research and/or services. These conferences will utilize state-wide videoconferencing

resources to convene participants in North Dakota.

Objective - 3:
The UNDSMHS Center for Rural Health will facilitate joint videoconferences with FCC Rural Pilot Programs in neighboring states, such as Minnesota, South Dakota and Montana to share lessons learned from each program's unique focus.

Objective - 4:
The UNDSMHS Center for Rural Health will disseminate the lessons learned to the *North Dakota Statewide HIT Steering Committee* to inform the development of the State HIT Roadmap. In addition, findings will be discussed in a policy brief to be provided to the state and federal policy makers.

Program Focus - Rural Health Care Pilot Program
The Center for Rural Health is involved in a number of areas of focus as described previously. The proposed HCREN will be utilized to address three main focus areas **health care quality/patient safety, health information technology and health care workforce.** The Center sees this FCC application as a valuable opportunity to enhance the existing network and connect rural health care facilities with a high-speed network to both the UNDSMHS educational as well as research services. The lessons learned and research results gleaned from this rural pilot program combined with the Design Study will serve to inform additional rural health care facilities throughout the state about sensible options when adopting the latest health information technology (HIT) applications to improve health care delivery.

Quality/Patient Safety
The CRH collaborates with the University of Minnesota Rural Health Research Center to form the Upper Midwest Rural Health Research Center (UMRHRC), one of eight national rural health research centers designated by the Office of Rural Health Policy. Through this partnership, the two Centers combine their expertise to conduct rural research on the quality of health care and the challenges of implementing quality improvement initiatives, including: limited resources, low volume of patients, small staffs, and inadequate information technology. The results of these ongoing studies are expected to produce important directives and recommendations for improving rural health care access, quality and efficiency.

The Building Research Infrastructure and Capacity (BRIC) grant, funded by the Agency for Healthcare Research and Quality (AHRQ), supports the Center for Rural Health's development of the Great Plains Institute for Rural Health Services Research (Institute). This Institute's faculty conducts research to assess the quality of healthcare in rural and frontier America, which contributes to the development of quality indicators appropriate for rural and frontier healthcare providers.

The CRH has also teamed with the University of Nebraska Medical Center to be one of 17 healthcare quality projects throughout the country funded by the federal Agency for Healthcare Research Quality. The project, a medication safety project, is the only one that focuses on rural and frontier hospital quality. Ten rural North Dakota hospitals volunteered to participate in the project to record their medication errors and near misses. This information assists them in examining the typical causes of medication errors so they can develop and implement quality improvement strategies appropriate for rural and frontier hospitals.

Health Information Technology

The Center for Rural Health is involved in planning and implementation of HIT in rural health care facilities in a number of ways. First, the PI for this pilot project serves as the director of the *BCBSND Rural HIT Grant program which is administered through the CRH. This grant funds* projects that demonstrate collaborative efforts involving rural health care facilities whose measurable outcomes improve access, safety, quality, effectiveness and efficiency of health services through the planning and implementation of an HIT infrastructure.

Also CRH administers the Medicare Rural hospital Flexibility (Flex) Program which assists rural hospitals by improving access to quality health services for rural North Dakotans. The ND Flex Steering Committee (Center for Rural Health, ND Healthcare (hospital) Association, and the ND Department of Health) administers the program. Thirty-one of 39 eligible hospitals (79%) have been designated as CAHs. All 39 of ND's rural hospitals have benefited from the Flex program. The focus currently network development, EMS, and quality improvement activities through Flex grants, research opportunities, technical assistance and community development.

Innovative projects include: 1) concentrated focus on performance management (including balanced scorecard), 2) quality improvement initiatives that foster increased networking (based on state-wide survey developed by Flex Program (nationally unique), 3) collaborative HIT development activities integrating Flex, the State Office of Rural Health (SORH), and the Small Hospital Improvement Program (SHIP), 4) refined orientation for new CEOs, 5) concentrated efforts to feature/share innovative projects occurring at the local level, 6) provide a bridge linking research opportunities available through the Center for Rural Health to critical access hospitals (e.g. medication error project and adapting aviation safety practices to rural medicine), 7) MN/ND Flex Programs matching funds to support emerging network.

The CRH also administers the Small Hospital Improvement program (SHIP). The Small Rural Hospital Improvement (SHIP) Grant Program provides funding to small rural hospitals to help them do any or all of the following: 1) pay for costs related to the implementation of PPS; 2) comply with provisions of HIPAA; 3) reduce medical errors and support quality improvement.
There is an ongoing effort on behalf of the CRH staff, through these three programs Flex, SHIP, and BCBSND and others to encourage rural health care facilities to work together as networks to improve quality/patients safety of health care services utilizing HIT.

Additionally, the PI serves as the Chair of the **ND Health Information Technology (HIT) Steering Committee**. This Committee recognized that in the foreseeable future, all information regarding patient care services and reimbursement will be required to be accessible electronically. The healthcare providers in the state, including clinics, hospitals, and long term care facilities, along with state agencies and organizations, have for some time been grappling with the emerging issues and challenges related to storing and exchanging information about patients and beneficiaries in a compatible electronic format. A major impetus for this was initiated when HIPAA was enacted in 1996. Based on HIPAA's information-sharing rules, it is in everyone's best interest to move forward in an open and cooperative dialogue that includes all stakeholders to determine how to best implement new health information technology initiatives.

For this reason the first "**ND HIT Summit**" was held in April, 2006 sponsored by Sen. Kent Conrad, ND Healthcare Review(QIO), ND Health Care (hospital) Association, ND Medical Association, the Center for Rural Health at UND School of Medicine and Health Sciences, BlueCross BlueShield of ND, and Gruby Technologies. As a result of a successful event, attended by over 160 participants, the

Summit partners recognized the need to continue the dialogue. In practical terms, the group is discussing issues such as:

- How to build a confidential and protected, patient-centered index that can be shared between healthcare providers.
- The need to examine existing HIT systems and data bases (e.g. immunization registry, drivers' license data, Medicaid beneficiaries).
- The assessment of current state laws and standards to assure that the data systems become interoperable.
- Identifying funding sources to develop, implement, and sustain the ND HIT system.

The committee consists of 18 members which are representative of the state health care system both medical and public health care facilities/organizations; rural and urban; third-party payer; academic and research; and consumers, etc. Upon the announcement in September of the FCC Rural Health Care Pilot program, the Steering Committee was fully supportive of an application being developed from our state as a priority.

Health Care Workforce

Between now and 2012, seven of the top ten fastest growing occupations across the nation are projected to be in health care.[1] Just 13 years from now, demand is expected to outstrip supply for a number of health care occupations including a projected shortage of 100,000 physicians and 800,000 nurses.[2] Shortages of health care providers are problematic because they can negatively impact health care quality and access to health care services. Shortages can also increase stress on available providers and contribute to higher health care costs by increasing the use of overtime pay and expensive temporary personnel.

While workforce shortages are a challenge for the entire health care system, they are likely to be most severe in rural areas of the United States. Underscoring this point, the Institute of Medicine recently noted that, "efforts should be made to boost the supply of health professionals in rural areas".[3] However, demand for health care providers is not just about meeting rural versus urban health care needs in America. Rather, increasingly the market for the health care workforce is global, with rising international competition. As a result, the workforce that North Dakota competes for is a workforce that can be recruited from or recruited to not just other locations in the United States, but other countries.

Against this backdrop of increasing demand, North Dakota starts at a distinct disadvantage. Already 81 percent of the state's 53 counties are designated as federal primary care health professional shortage areas.

North Dakota Health Professional Shortage Areas
Rural Hospitals, Clinics, CHCs and RHCs
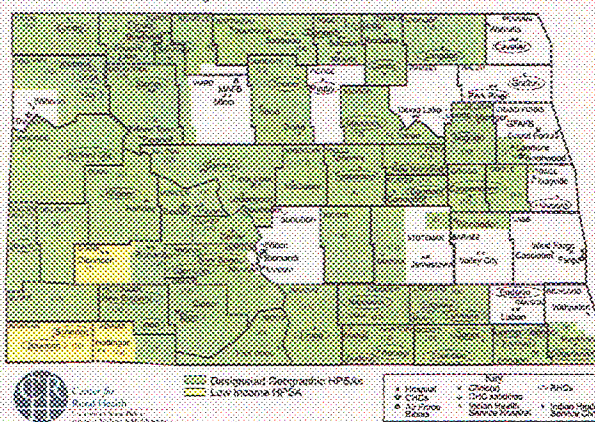
North Dakota Mental Health Professional Shortage Areas
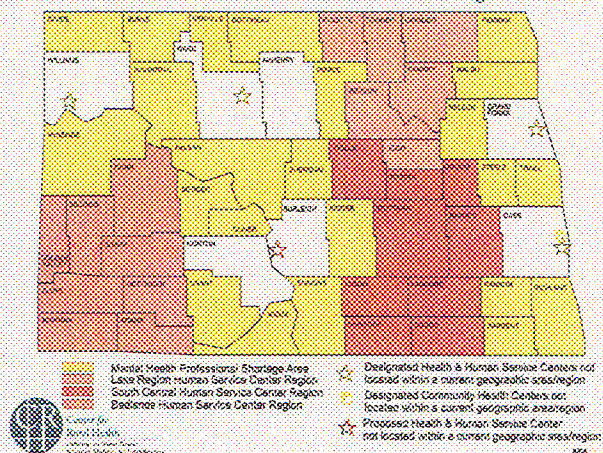
One-third of North Dakota counties are designated as oral health shortage areas and 94 percent of the state's counties are designated as mental health professional shortage areas. Exacerbating this problem are survey data suggesting that approximately 26 percent of the state's physicians and 24 percent of the state's nurses are planning to retire by 2015-less than 10 years from now. These data are consistent with concerns expressed in 16 community forums held across the state over the past three years. In meetings held by the Center for Rural Health, difficulty in maintaining an adequate workforce, ranging from clinical laboratory and radiology technicians to emergency medical service providers, was a consistent concern. Urban-based health care providers are also expressing workforce concerns. Some urban concerns overlap with those of rural providers and communities, while other urban workforce issues are somewhat different (e.g., attracting physician specialists and high turnover rates for nurses). North Dakota faces current and emerging challenges related to features of both supply and demand. For example, North Dakota's current supply of physicians, dentists, dental assistants, podiatrists, pharmacy technicians, emergency medical service providers and radiology technicians is below the per capita average.[4] In terms of demand, Job Service of North Dakota expects significant growth (over 10 percent) in demand for pharmacists, occupational therapists, physical therapists, medical and clinical laboratory technologists and technicians, physician assistants, registered nurses and others by 2014.[5]

Demand for health care providers is driven by many factors ranging from the increase in our state's aging population to the significant geographic distance that many clinicians cover in order to reach populations in need of health care. Given the demographic trajectory of North Dakota as well as anecdotal and quantifiable information about our health care workforce, the state clearly faces emerging challenges to ensure access to an adequate workforce.

Addressing workforce supply requires a multifaceted approach, one of which the proposed Health Care and Education and Research Network(HCREN) will address by improving access to educational opportunities for continuing education to support the healthcare professionals currently practicing in the state as well as learning opportunities for students in various health care fields. It will also offer opportunities to conduct pilot studies that can help determine the effectiveness of telemedicine programs, for example telepsychiatry, as a tool to help overcome the acute shortages of mental health professionals in rural areas.

SECTION 3
BUDGET
Estimate the network's total costs for each year.

Reoccurring Line Charges:

Site	Annual Cost	85% Annual Cost	15% Annual Cost
Bismarck UNDSMHS Campus	$ 11,400	$ 9,690	$ 1,710
Devils Lake Mercy Hospital	$ 11,400	$ 9,690	$ 1,710
Dickinson St. Joseph's Hospital	$ 11,400	$ 9,690	$ 1,710
Fargo UNDSMHS Campus	$ 11,400	$ 9,690	$ 1,710
Fargo Neuropsychiatric Research Institute	$ 11,400	$ 9,690	$ 1,710
Grand Forks Altru Hospital	N/A	N/A	N/A
Grand Forks UNDSMHS Campus	N/A	N/A	N/A
Hettinger West River Medical Center	$ 11,400	$ 9,690	$ 1,710
Jamestown Hospital	$ 11,400	$ 9,690	$ 1,710
Minot UNDSMHS Campus	$ 11,400	$ 9,690	$ 1,710
Park River to UNDSMHS MCU	$ 11,400	$ 9,690	$ 1,710
Williston Mercy Hospital	$ 11,400	$ 9,690	$ 1,710
Total Annual Cost	**$ 114,000**	**$ 96,900**	**$ 17,100**

Construction Costs:

Site	Construction Cost	85% of Cost	15% of Cost
Bismarck UNDSMHS Campus	$ -	$ -	$ -
Devils Lake Mercy Hospital	$ -	$ -	$ -
Dickinson St. Joseph's Hospital	$ -	$ -	$ -
Fargo UNDSMHS Campus	$ 58,000	$ 49,300	$ 8,700
Fargo Neuropsychiatric Research Institute	$ 40,000	$ 34,000	$ 6,000
Grand Forks Altru Hospital	N/A	N/A	N/A
Grand Forks UNDSMHS Campus	N/A	N/A	N/A
Hettinger West River Medical Center	$ -	$ -	$ -
Jamestown Hospital	$ 640	$ 544	$ 96
Minot UNDSMHS Campus	$ -	$ -	$ -
Park River to UNDSMHS MCU	$ -	$ -	$ -
Williston Mercy Hospital	$ -	$ -	$ -
Total Construction Cost	**$ 98,640**	**$ 83,844**	**$ 14,796**

Summary Totals:

Summary Totals	Cost		85% of Cost		15% of Cost	
Year 1						
Construction Costs	$	98,640	$	83,844	$	14,796
Reoccurring Line Costs	$	114,000	$	96,900	$	17,100
Total year 1 Costs	**$**	**212,640**	**$**	**180,744**	**$**	**31,896**
Year 2						
Reoccurring Line Costs	$	114,000	$	96,900	$	17,100
Total Commissioned Study Costs	$	10,000	$	8,500	$	1,500
Total year 2 Costs	**$**	**124,000**	**$**	**105,400**	**$**	**18,600**
Total two year project costs	**$**	**336,640**	**$**	**286,144**	**$**	**50,496**

SECTION 4
Describe how for-profit network participants will pay their fair share of the network costs;
For-profit network participants are not anticipated due to the lack of such health care providers in
North Dakota. However, should the issue arise; for-profit participants will need to pay all of their
network construction and connection expenses.

SECTION 5
Identify the source of financial support and anticipated revenues that will pay for costs not covered by the fund
The UNDSMHS has a long history of supporting data and communication connections to its four
primary campuses in Bismarck, Fargo, Grand Forks and Minot, and to the four – soon to be five –
ROME site hospitals. The funds that have been expended to maintain those communication resources
will be diverted to support 15% of this proposed project.

This diversion will allow the funds the medical school has been using for existing connections to be
leveraged with the FCC funding to construct and maintain HCREN as a world-class high-speed
communications network for health care research and education without creating additional costs for
the medical school. After the first year of initial network construction, it appears that their may
actually be an opportunity to even expand HCREN in subsequent years without increasing the cost to
the UNDSMHS.

SECTION 6
List the health care facilities that will be included in the network

West River (Regional) Medical Center
1000 Highway 12
Hettinger, ND 58639
701-567-4561
RUCA Code (10)

Mercy Hospital
1301 15th Ave W
Williston, ND 58801
701-774-7400
RUCA Code(4)

St. Josephs Hospital
30 West Seventh Street
Dickinson, ND 58601
701-456-4000
RUCA Code (4)

Jamestown Hospital
419 5th Street NE
Jamestown, ND 58401
701-252-1050
RUCA Code (4)

Mercy Hospital
1031 Seventh Street NE
Devils Lake, ND 58301-2798
701-662-2131
RUCA Code (7)

SECTION 7
Indicate previous experience in developing and managing telemedicine programs

The UND School of Medicine and Health Sciences has a long history of utilizing technology to
support its state-wide and national efforts to train health care professionals.

During its first 68 years of existence, the UNDSMHS was what was known as a two-year medical school, providing students with a strong two-year foundation in the basic sciences and then sending the students to other medical schools all over the United States and Canada for their last two years of clinical training.

When it became obvious that other medical schools would no longer be able to accept outside students due to government initiated increases in the number of medical doctors graduated each year, North Dakota was left in a very serious predicament. The states' low population density made it impossible to find any single hospital in the state that could provide a patient base sufficiently large to serve as the medical schools "teaching hospital".

Ingenuity on the part of some very creative UNDSMHS professors, administrators and North Dakota physicians developed a viable solution. A proposal to utilize hospitals all over North Dakota as UNDSMHS's unique version of a "teaching hospital" was greeted with enthusiastic acceptance by the people that accredit medical schools, the Liaison Committee on Medical Education (LCME). However, the LCME included one very important stipulation; they emphasized that every student must have the same opportunity to access a homogenous educational experience no matter where they are being trained in the state. From that day forward, distance learning or tele-education became top priority at the UNDSMHS.

In the late 70s, an early attempt at videoconferencing called Slow-Scan was implemented between the Fargo and Grand Forks campus over 56Kbs dedicated lines, but the one or two black and white pictures sent per minute were deemed to add little or no value to the audio connection, and Slow-Scan was abandoned.

In the early 80s, the UNDSMHS established and operated a 60 port telephone network that was known as the Educational Telephone Network (ETN). This network was hugely successful and was used for distance education and other purposes through 2004 when it was replaced with commercial services.

In the early 90s, the UNDSMHS implemented a satellite delivery system known as MedStar that delivered programming emanating from Grand Forks to more than 40 hospitals and healthcare providers all over North Dakota. The venerable ETN was used to establish an interactive component for the delivery system. Though some programming is still carried through this medium by one of the Grand Forks healthcare providers, Altru Health System, most of the traffic has been diverted to Internet based H.323 videoconferencing.

In 2002, the UNDSMHS inaugurated the ROME program in Hettinger, Jamestown and Devils Lake. Initially a combination of ETN, H.324 videophone technology and dial-up Internet connections were used to tie the ROME sites back into to the four campus sites in Bismarck, Fargo, Grand Forks and Minot, however, as broadband Internet connections became available and more affordable they were installed at the ROME sites and H.323 videoconferencing systems were installed to take over the videoconferencing aspects of the communication between the ROME and campus sites.

The ROME project, the Center for Rural Health's SEARCH and CRISTAL projects and Family Medicine's 3rd Year Clerkship have all been major contributors of equipment for state-wide communications, and to-date the UNDSMHS administers more then 40 videoconferencing units at 27 sites around North Dakota along with a multi-point conferencing unit (MCU) which is used to hook up to 20 sites at one time and to connect into other North Dakota educational and tele-health networks.

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The UNDSMHS MCU provides connectivity to virtually every part of the state and to Internet H.323 systems based anywhere in the world.

This connectivity is also used extensively to bring educational programming to health care providers all over North Dakota and to facilitate meetings that help rural and urban health care providers establish virtual collaborations to improve the quality, safety, effectiveness and efficiency of health care delivery.

Internet based videoconferencing and other Internet based applications are also used by the UNDSMHS to serve its 20+ Occupational Therapy students in Casper, Wyoming and more than 100 Clinical Laboratory Students at the Mayo Clinic in Rochester, Minnesota.

Telemedicine Business:
UNDSMHS has also used the latest communications technologies since the mid 1980s to maintain state-wide administration, billing and patient scheduling applications between its Centers for Family Medicine (Formerly Family Practice Centers), which are in Bismarck, Fargo, Grand Forks and Minot. The current applications for these purposes utilize the Internet for the necessary communications, and this has eliminated the need for expensive dedicated circuits between sites.

Clinical Telemedicine:
The UNDSMHS has hosted and implemented technologies for the psychiatric research done in Cognitive Behavioral Therapy (CBT) for treatment of bulimia nervosa through telemedicine by the Neuropsychiatric Research Institute (NRI). NRI is a non-profit organization that works closely with the UNDSMHS, and its president is the chair of the UNDSMHS department of Neuroscience.

As this telepsychiatry project has progressed over the last several years, expensive dedicated lines used for the clinical therapy comprising patient treatment in this discipline have been replaced with Internet connections and hardware employing HIPAA compliant encryption algorithms.

The UNDSMHS's Department of Computer Services also worked with the Department of Community Medicine chair and director of the Altru Hospital Diabetes Center, Grand Forks, in the design and deployment of a wireless, mobile patient examination cart which housed H.323 based videoconferencing equipment. Patient vital signs were collected and transmitted directly from patient rooms in a Grand Forks long-term-care facility to a physician at the Altru Clinic.

Finally, one of the investigators in this application, Don Larson, is currently working with the St. Alexius Hospital in Bismarck in the conversion of their tele-health network from equipment using H.320 dedicated line protocol to Internet-based H.323 protocols using HIPAA compliant encryption. (As a statement concerning potential conflict of interest, St. Alexius is not a participant nor service recipient in this application.)

SECTION 8
Provide a project management plan outlining the project's leadership and management structure, as well as its work plan, schedule, and budget.

Project Management Plan:
The management of this pilot project will be a joint agreement between the UNDSMHS, Center for Rural Health and Computer Services. The Coordinator of Computer Services (Co-Principal Investigator/HCREN Program Coordinator) will have the responsibility of all technical aspects of the

project and assistance will be solicited from the UND Information Technology Services and North Dakota's ITD when necessary.

The Principal Investigator from the Center for Rural Health will be responsible for fiscal administration; videoconference/meeting coordination; communication and information dissemination.

Member participants will be asked to provide potential research and/or educational projects for implementation on the HCREN, and a determination on which projects will be implemented will be made by the PI and the HCREN Program Coordinator, after consultation about suitability and legality with the appropriate UND, state and possibly national or international entities.

Lynette Dickson, MS,LRD - Principal Investigator
Ms. Dickson serves as the Project Director of the State Office of Rural Health(SORH) Grant program sponsored by the Health Resource Services and Administration-Office of Rural Health Policy. In her position she directs the North Dakota Blue Cross Blue Shield Rural Health Outreach Grant program which provides support for rural HIT projects. She also serves as the planning committee chair for the Annual Dakota Conference on Rural and Public Health and as the Chair of the North Dakota HIT Steering Committee. In addition, as part of the core function of the SORH grant program, she collects and disseminates information on rural health, assists communities with grant development process, strategic planning, program development, and organizational coordination.

Don Larson, Co-Principal Investigator/HCREN Program Coordinator
Don Larson is the Coordinator of Computer Services at the UNDSMHS. In that capacity he is responsible for providing planning and support for Academic and Administrative computing at the UND School of Medicine and Health Science's four campuses and affiliated teaching hospitals.

He is also responsible for the design, implementation and operation of the UNDSMHS's videoconferencing resources. Those resources include 40 + videoconferencing endpoints distributed throughout North Dakota, a videoconferencing bridge, equipment to broadcast conference content and videoconferencing recording and streaming equipment.

He also does work outside of the university system with emphasis on the design and implementation of video networks and the production of technical training materials

Work Plan (See Work plan Matrix):
Upon receipt of the funding, the Coordinator, UNDSMHS, Computer Services will work with North Dakota's Information Technology Division (ITD) to install and activate the communication links comprising the HCREN.

Concurrently, the participants in the project will be informed of the HCREN startup date at their facility and their suggestions for potential electronic applications of HCREN will be solicited. Project ideas will also be solicited from UNDSMHS researchers.

As soon as potential applications are approved by project PI and Program Coordinator as described above, UNDSMHS Computer Services will work with ITD and information specialists at the proposed site to develop an implementation plan and timeline.

During the implementation process, provisions for monitoring the network related technical implications of each project will be developed and implemented in a collaborative effort between ITD,

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UNDSMHS Computer Services, UND ITSS and network administrators at the project site.

Schedule:
It is expected that the HCREN infrastructure should be installed and operational within 6 months of receipt of funding sources. During the installation period, the PI and HCREN Program Coordinator will confer with information specialists and researchers at member sites to determine suitable applications for HCREN.

The solicitation of project ideas will be an ongoing process. The PI and HCREN Program Coordinator will also identify suitable methods for collection and dissemination of research data during the network construction period. After the installation period, projects will be implemented, and data collection will begin. Upon the first anniversary of the project, the Design Study will be initiated.

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Federal Communication Commission -- Rural Health Care Pilot Program -- Year -- 1

Responsible Party	Proposed Tasks	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Computer Services	Coordinate the installation of network upgrades with ND ITD	✓											
Computer Services and CRH	Solicit potential projects from hospitals and UNDSMHS researchers	✓	✓	✓	✓								
Computer Services, Hospital network Specialists	Implement approved Projects on HCREN					✓	✓	✓	✓	✓	✓	✓	✓
Computer Services Hospital network Specialists, ITD UND ITSS, CRH	Design and Implement research data measuring, gathering and archival systems				✓	✓	✓	✓	✓	✓	✓	✓	✓
CRH, UNDSMHS clinical departments	Choose UNDSMHS and other events for broadcast to rural sites all across ND	✓	✓	✓		✓		✓	✓	✓		✓	
CRH	Anecdotal summaries and observations are solicited from participants						✓			✓	✓	✓	✓
CRH Computer Services	A electronic forum reporting on HCREN will be planned advertised and offered to state Health care providers												✓

Federal Communication Commission -- Rural Health Care Pilot Program -- Year -- 2

Responsible Party	Proposed Tasks	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Computer Services CRH, ITD, UND ITSS	Data from first yr research is gathered and analyzed	√	√	√									
Computer Services CRH, ITD, UND ITSS	Data from yr -2 research is gathered and analyzed					√					√	√	√
CRH	Anecdotal summaries and observations are solicited from participants	√	√	√							√	√	√
Computer Services Hospital network Specialists, ITD UND ITSS, CRH	Design & Implement research data measuring, gathering & archival systems					√	√	√	√	√	√	√	√
Computer Services, Hospital network Specialists	Implement approved Projects on HCREN and design research data gathering applications	√	√	√		√	√	√	√	√	√	√	
CRH Computer Services	A electronic forum reporting on HCREN will be planned advertised and offered to state Health care providers						√						√

SECTION 9

Indicate how the telemedicine program will be coordinated throughout the state or region

The HCREN will be coordinated through the UNDSMHS Center for Rural Health in close collaboration with representatives designated by the health care providers involved in the project.

SECTION 10

Indicate to what extent the network can be self-sustaining once established.

Once the FCC Rural Health Care Pilot Program funding period has ended, the UNDSMHS will maintain its commitment to provide the communications infrastructure to its four campus locations and the ROME sites. This would be necessitated by the Liaison Committee on Medical Education's requirement for UNDSMHS's accreditation that requires a state-wide medical school like the UNDSMHS to provide equal access to educational opportunities to all medical students no matter where they are in the state.

However, elimination of the funding would require that all bandwidths provided would need to be re-examined for cost-effectiveness. Those circuits that were not being used for a cost-effective application would and should be replaced with slower and less expensive circuits. It is likely that analysis of the data gathered on applications hosted on the HCREN will prove invaluable in making the bandwidth adjustments in a fashion that would insure the least degradation in services needed.

Appendix A

Resumes – Key Staff

LYNETTE J. DICKSON, MS, LRD

826 So 23rd St
Grand Forks, North Dakota 58201
701-777-6049
e-mail-ldickson@medicine.nodak.edu

EDUCATION

North Dakota State University, Fargo, ND   MS, Food and Nutrition, 1998
> Internship: Grand Forks Public Health, Grand Forks School District,
> Child Nutrition Program, Veterans Administration Hospital, Fargo, ND

University of Utah, Salt Lake City, Utah   BS, Food and Nutrition, 1978

Professional Development:
> HRSA, Office of Rural Health, HIT:A Rural Provider's Roadmap to Quality, 2006
> National Rural Health Association, Skill Building Workshop, 2006
> AHRQ, Annual Patient Safety and Health IT Conference, 2006
> Capital Hill–Steering Committee on Health Information and Technology,
>   Demonstration and Presentations, 2006
> ND Senator, Kent Conrad's - North Dakota HIT Summit, 2006
> National Rural Health Association (NRHA) Annual Conference, 2003-2005
> National Rural Health Association (NRHA) Policy Institute, 2003-2006
> State Office of Rural Health (SORH) Annual and Regional Grantee Meetings, 2003-2006
> National Organization of (NOSORH), Annual Meeting, 2003-2006
> White House Conference for Faith Based and Community Initiatives, 2003
> CDC Diabetes Translation National Conference, 1999, 2000
> International Diabetes Camping Association Conference, 1998-2001
> American Diabetes Association National Conference, 1998, 2001
> Regional Parish Nurse Health Conference, 2000

LICENSES

North Dakota Licensed Registered Dietitian (LRD)-#855373

EMPLOYMENT

Project Director-State Office of Rural Health Grant Program, Rural Access to Emergency Devices Grant Program, Blue Cross and Blue Shield North Dakota, Rural Health Grant Program, Chair-North Dakota Annual Dakota Conference on Rural and Public Health,
Center for Rural Health, University of North Dakota, School of Medicine and Health Sciences, 2003-Present

North Dakota Area Program Manager/Camp Sioux Director
American Diabetes Association (ADA), serving North Dakota and northwestern Minnesota, 1995-2003

Nutritional Consultant. NuGrain Products, Co. Harvey, ND. 1994.
> Marketed nutritional aspects of cereal and bread products at state and national trade shows.
> Conducted product education and sales promotional activities through direct contacts with decision makers in healthcare facilities, school food service, and grocery distribution industry.

PROFESSIONAL and ACADEMIC SERVICE:

Board of Directors and Advisory Councils:
> National Organization of State Office of Rural Association (NOSORH) – Current Board Member
> University of Minnesota, Midwest Center for Life-Long-Learning in Public Health,
>   Rural Health Liaison, 2005-present
> International Diabetes Camping Association, Board of Directors, 2003
> North Dakota Department of Health-CDC-Diabetes Control Program, 1999-2002

Migrant Health Diabetes Program, 2000-2002
North Dakota Diabetes Youth Outreach, 1996-2001
University of Minnesota, Crookston, Dietetic Technician Program, 1997-2001

Committee Member:

ND HIT Steering Committee - Chair, present

Regional (NW), HIT Technology Summit (2007) Planning Committee, present

National Rural HIT Conference (2007) Planning Committee, present

National Rural HIT Coalition, present

Senator Kent Conrad – ND HIT Summit, Planning committee and facilitator, 2006

National Organization of State Offices Rural Health, (NOSORH) committees
        HIT, EMS, Nominating, Communications and Finance, present

HRSA, OAT, Telehealth Network Grant Review Panel, 2006

HRSA, ORHP, Network Development Grant Review Panel, 2003-2005
        Network Development Planning Grant Review Panel, 2004, 2005
        Small Hospital Improvement Program Grant Review Panel, 2005

North Dakota Blue Cross Blue Shield Rural Health Outreach Grant Review Committee, 2004-present

Dakota Conference on Rural and Public Health, (2003-2004, member; 2005 -present, Chair).

HRSA, ORHP, State Office Rural Health (SORH)
        Grant Guidelines Committee, 2003
        GPRA Guidelines for SORH Grantees Committee, 2003

Greater Grand Forks Area Chamber of Commerce-Health Trip Committee, 1996-1998

North Dakota State University, University Senate, 1995-1997

North Dakota State University, Department of Food and Nutrition
        Graduate Committee, 1994-96
        Department Chair Search Committee, 1996

Professional Membership:

National Organization of State Offices of Rural Health-Current Board member

National Rural Health Association

Greater Grand Forks Dietetic Association-Past President

North Dakota Dietetic Association-Past State Board member

American Dietetic Association
    Dietetic Professional Practice Groups-
        Sports, Cardiovascular and Wellness Nutrition
        Diabetes Care and Education practice group
        Nutrition Entrepreneur

International Diabetes Camping Association – Past Board Member

American Camping Association

Presentations:

"Lessons learned from Office of Performance Review Process" and *"Jim Bernstein Mentoring Program"* NOSORH Annual Meeting, Portland Maine, September, 2006.

"Center for Rural Health Overview", North Dakota Health Information Management Association, Annual Statewide Conference, Fargo, 2006.

" Community Development Tools for Decision Making and Rural Health Dialogues: Innovative Patterns to Partnership with Communities" National Rural Health Association Annual Conference, Reno NV, May, 2006

"A Survey of Leading Rural Telehealth and Health IT Programs of the Pacific Northwest"(panel presentations), Connecting Rural Health Communities Through Information Technology Conference, Butte MT, October , 2005.

"Fundamentals of Grant Writing", Richardton, September, 2004; Long Term Care Association of North Dakota, Bismarck, September, 2004; Cavalier, February, 2005; Turtle Mountain Community College, Belcourt, June 2005; Little Hoop Community College, Fort Totten, June, 2005; Hettinger, 2005; State EMS Conference, 2006.

"Strategic Planning Workshop", (with Brad Gibbens), Hatton, January, 2005; Cavalier, February, 2005.

"Strengthening Rural Health Care Facilities Through Community Development" (with Marlene Miller
and Lynette Dickson), presented as concurrent session at Dakota Conference on Rural and Public
Health, Bismarck, ND, March, 2005.
Other healthcare professional, student and community workshops to include:
Northland Health Care Alliance-rural health clinics and numerous clinics and community events
statewide. UND--College of Nursing & Family Medicine, Grand Forks - Community Wellness Fair,
University of Minnesota, Crookston, MN; Concordia College, Moorhead MN; NDSU; Northland
Technical College, East Grand Forks, MN.
ND Senator Byron Dorgan's-Women's Wellness Conference, 2000, 2002, 2004
International Diabetes Camping Association Conference, 2001
North Dakota Dietetic Association State Convention, Spring 1996, 1998, 2004
Chicago Area American Diabetes Association, patient workshop, 1998

Poster Presentations:
American Dietetic Association, National Meeting- 1998
Centers for Disease Control, Diabetes Translation National Conference- 2001

Publications, Articles and Reports:
The "Good Neighbor Project" <u>Focus on Rural   Health.</u> (Vol. 21. No. 2, Summer, 2005). UND
Center for Rural Health, Grand Forks, ND.

Rural Health Grant Development Process Guide, Center for Rural Health, UNDSMHS,
September, 2005.

Bottineau Community Wellness Survey – Results Report, Center for Rural Health, UNDSMHS, Grand
Forks, ND. August, 2004.

Langdon Community Wellness Survey – Results Report, Center for Rural Health, UNDSMHS, Grand
Forks, ND. September, 2004.

AWARDS

National Organization of State Offices of Rural Health, "Distinguished Service Award, 2006
American Diabetes Association-North Central Region, "Passion for Making a Difference" Award, 2000
City of Gilby, North Dakota, Community Service Award, 1992

COMMUNITY INVOLVEMENT
Sharon Lutheran Church, Board of Church in Society, 2006
International Student, Host Family, 2000-2002
Junior Achievement Program, Grand Forks Public Schools, 2001

Don Larson
Coordinator Computer Services
UND School of Medicine and Health Sciences

1989 - Present Employed by the University of North Dakota School of Medicine & Health Sciences in the department of Computer Services.
Functional title: Coordinator of Computer Services.

In role as Coordinator of Computer Services:

Responsible for providing planning and support for Academic and Administrative computing at the UND School of Medicine and Health Science's four campuses and affiliated teaching hospitals. Support includes working with the wide area network for education and the administrative arm of the Medical School. The implementation of that wide area network includes Local Area Networks (LANs), gateways, routers, bridges and remote control units to connect LANs at all of the campuses to each other and to a School of Medicine mini-computer used for billing and scheduling at the medical schools state-wide family practice clinical sites.

Responsible for providing communications support for the medical school. My specific responsibilities are for the design, installation, operation and support of the UND School of Medicine and Health Science's videoconferencing resources. Those resources include more than 40 Internet based videoconferencing endpoints distributed throughout North Dakota, the medical school's multipoint videoconferencing unit (videoconferencing bridge) connected to the commercial Internet as well videoconferencing recording and streaming equipment, and associated content delivery mechanisms. Some of these resources are in other states.

Responsible for designing, implementing and supporting computer learning stations and labs at the remote campuses and some of the affiliated teaching hospitals around the state. Provisions have been made for support and maintenance of these stations over the Internet.

Project - Designed and implemented the computer component of the School of Medicine's MedStar Satellite Network. Provisions were been made for remote support and maintenance of the installed computer component at the MedStar hospital sites, and provisions for connections into the Internet were included in the design and implementation.

Project-Taught PC 101, the first interactive class on the MedStar Network. PC 101, a course dealing with the use of Windows and various Windows applications, drew the largest enrollment ever recorded for a class offered by North Dakota's Higher Education institutions.

Independent Project – Designed and implemented the North Dakota Health Care Review's videoconferencing network for the Long Term Care Improvement Project. Implementation included 19 videoconferencing endpoints all over North Dakota with suitable connections into the commercial Internet and a videoconferencing bridge at the telecommunications network operating center in Ray, ND.

1994 - 96
Independent Project – Technical consultant and content advisor for Prairie Public Broadcasting's AG-10 Computer Education project.
Independent Project – Technical consultant and grant writer for Thief River Falls Community Telecommunications Strategic Planning Task Force.
Independent Project – Served as technical consultant and implementer for the North Dakota Hospital Association Foundation's Ladders in Nursing Careers (LINC of North Dakota) program. "L.I.N.C. became a state leader in distance learning — assisting schools and students to utilize technology to increase access to nursing education. To do so, North Dakota Project L.I.N.C. overcame turf barriers to adopting distance education technology, linking students to specific schools, and allocating financial aid resources to non-traditional students taking courses at more than one nursing program."

Implementations included training materials, Internet connections to rural areas, e-mal access and a laptop computer program.

1988 - 96   Professor of Mathematics, Embry-Riddle Aeronautical University, College of Continuing Education. Taught Embry-Riddle's curriculum for Aviation Mathematics - Elements of algebra, trigonometry, analytic geometry, calculus and statistical analysis and their applications to aviation.

1972 - 88   Taught high school and adult classes in math, aviation, physics and computer programming at Midway High School Inkster, North Dakota.

Constructed and maintained Local Area Networks (LANs) in the Midway School District's computer labs. The first, a crude network in 1981 and a second, more sophisticated CSMA/CD Corvus network in 1986. Full year courses in math and English communications were available on the network at all times.

Taught a number of computer languages in high school, (BASIC, Pascal 6502 assembler APL, FORTRAN and others). Members of my Midway Computer I and Computer II programming classes were very competitive in area computer programming contests, and in State and International Science Fairs with computer robotics projects and other computer related projects. To this day, I am very proud of them.

Worked with Midway Board of Education to develop very successful curriculums in mathematics, computer science and aviation, and shared those math and computer curriculums with other teachers as a presenter at North Dakota Education Association conventions.

1970 - 72   Taught high school math and physics at Drake High School, Drake, North Dakota.
1968 = 85 Graduate work in mathematics and aviation at Moorhead State University and North Dakota State University
1967 - 68   Graduate Teaching assistant in Mathematics at the University of North Dakota

1967 B.S. in education, Mayville State College, Mayville, ND

Born and raised in rural Niagara, North Dakota

Appendix B

Center for Rural Health
Organizational Chart

Center for Rural Health
University of North Dakota School of Medicine & Health Sciences

H. David Wilson, MD, Dean

Mary Wakefield, PhD, Director

Finance and Grants Manager

Wendy Warner, MS

Project Assistant to Finance

Jennifer Knutson

Information Specialists

Holly Gabriel, MPH, MLS
Maren Niemeier, MLIS
Mary Reinertson-Sand, MLS
Kathy Spencer, MLS, MS

Communications Coordinator

Amanda Scurry, MS

Associate Director for Community Development

Brad Gibbens, MPA

Project Directors

Mary Amundson, MA
Lynette Dickson, MS, LRD
Marlene Miller, MSW
Kristine Sande, MBA

Project Coordinators

Twyla Baker-Demaray, MS
Susan Beattie
Kylie Behm
Garth Kruger, MA
Terri Lang
Joyce Rice
Jennifer Wages, MSW

Project Assistants

Marilyn Fundingsland   Naomi Lelm   Kim Ruliffson

Administrative Support

KayLynn Bergland   Susan Rundquist
Michelle Graba   Karen Speaker

Associate Director for Operations

Sue Offutt, PhD

Researchers

Richard Ludtke, PhD
Patricia Moulton, PhD
Kyle Muus, PhD
Alan Allery, PhD
Pat Conway, PhD
Jacque Gray, PhD

Web Designer

Julie Arnold

Associate Director for Research

Alana Knudson, PhD

Center *for* Rural Health
University of North Dakota
School of Medicine and Health Sciences

1905

Appendix C

<u>Letters of Support:</u>

Senator Kent Conrad
Department of Family and Community Medicine (UNDSMHS)
Neuropsychiatric Research Institute
Department of Clinical Neuroscience
Mercy Medical Center, Williston

KENT CONRAD
NORTH DAKOTA

website: http://conrad.senate.gov

COMMITTEES:
BUDGET, CHAIRMAN

AGRICULTURE, NUTRITION, AND FORESTRY
FINANCE
INDIAN AFFAIRS

United States Senate

May 3, 2007

1-800-223-4457

530 HART SENATE OFFICE BUILDING
WASHINGTON, DC 20510-3403
(202) 224-2043

220 EAST ROSSER AVENUE, ROOM 228
BISMARCK, ND 58501-3866
(701) 258-4648

657 2ND AVENUE NORTH, ROOM 306
FARGO, ND 58102-4727
(701) 232-8030

102 NORTH 4TH STREET, SUITE 104
GRAND FORKS, ND 58203-3738
(701) 775-9601

100 1ST STREET, S.W., ROOM 105
MINOT, ND 58701-3846
(701) 852-0703

Mary Wakefield
Director
UND Center for Rural Health
501 North Columbia Road
Box 9037
Grand Forks, ND 58202-9037

Dear Mary:

It is my pleasure to support the grant proposal developed by the University of North Dakota (UND) Center for Rural Health to create the Health Care Research and Education Network. This vitally important proposal will help connect facilities across North Dakota to improve access to health care in rural areas and facilitate important health research.

As you well know, North Dakota is one of the most rural and underserved states, and we face tremendous challenges in meeting our health care needs. 68 percent of our counties are classified as frontier, and nearly 83 percent of the counties are Health Professional Shortage Areas. This makes accessing health care difficult, and we must begin to find creative ways of addressing these problems.

The Health Care Research and Education Network could serve as an important starting point. Connecting the UND School of Medicine and Health Science's four main campus sites (Grand Forks, Minot, Bismarck, and Fargo) and their satellite clinical sites (Jamestown, Dickinson, Williston, Hettinger, and Devil's Lake), the high-speed data Network will educate medical students in rural areas and facilitate important health research.

Encouraging students to practice in rural areas is extremely challenging, and programs like the UND Rural Opportunities in Medicine program and the Student/Resident Experiences and Rotations in Community Health program play an important role. However, more work is needed to bring medical professionals to rural and remote areas. The Health Care Research and Education Network would offer connectivity for use in continuing education or ancillary services otherwise not available in these areas. Moreover, the Network will provide students with access to important data that could be helpful in health research. Finally, I commend the Center for its intent to conduct a connectivity assessment for all of North Dakota's 39 rural hospitals. This will serve as a test bed to inform other health care entities in the state on the most appropriate use of high-speed network technologies in the adoption of health information technology and, more specifically, electronic medical records.

Again, I commend your efforts and look forward to our continuing partnership in improving access to health care in rural North Dakota.

Sincerely,

KENT CONRAD
United States Senator

May 3, 2007

Mary Wakefield, Ph.D.
Director, Center for Rural Health
University of North Dakota School of Medicine and Health Sciences

Dear Dr. Wakefield:

I am writing in strong support of the proposal coming from your Center to obtain support to construct a "Health Care Research and Education Network."

The Department of Family Medicine is developing a primary care research network in North Dakota and adjacent areas; this network, called NORTHSTAR, will address quality improvement in the setting of rural practice. An essential infrastructure element for this activity is an excellent communications system among the practice sites, health institutions in the state, and the medical school; high-speed data links are a critical part of this infrastructure. The modernization of existing links to state-of-the-art standards will be very helpful in conducting the work of NORTHSTAR.

I strongly support this project and hope that you are successful in obtaining the funding you have requested.

Sincerely,

Charles E. Christianson, M.D., Sc.M.
Associate Professor, Family Medicine
Director, NORTHSTAR

Tele: 701-293-1335
Fax: 701-293-3226

Neuropsychiatric Research Institute
700 FIRST AVENUE SOUTH
FARGO, NORTH DAKOTA 58107

P.O. Box 1415

May 2, 2007

University of North Dakota
Center for Rural Health
School of Medicine and Health Sciences
501 N Columbia Rd. Stop 9037
Grand Forks, North Dakota 58201

Re: FCC Rural Pilot Program

To Whom It May Concern:

The Neuropsychiatric Research Institute (NRI) enthusiastically endorses the University of North Dakota School of Medicine and Health Sciences (UNDSMHS) Center for Rural Health's proposed construction of a high-speed data network, Health Care Research & Education Network (HCREN), to connect the UNDSMHS four main campus sites and its own clinical medical sites to several rural health care facilities in North Dakota.

This initiative addresses chronic shortfalls in medical services available to rural areas in North Dakota. Additionally, the proposal will partner with non-profit organizations, like NRI to develop outreach mechanisms that will make therapies, currently unavailable, accessible by rural areas throughout the United States.

NRI applauds the forward thinking of the Center for Rural Health, and we pledge our support in the fruition of its goals.

Sincerely,

Ronald J. Erickson
V.P. for Administration

May 3, 2007

Don Larson
Coordinator, Computer Services
University of North Dakota
School of Medicine and Health Sciences
501 N. Columbia Road Stop 9037
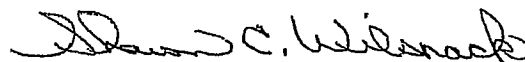Grand Forks, ND 58202-9037

Dear Don:

I am writing to enthusiastically support your application to the Federal Communication
Commission for a Rural Health Care Pilot Program to support the construction of a high-speed
data network, the Health Care Research and Education Network (HCREN).

As you know, I direct two large research projects. One is a 20-year longitudinal study of
drinking and problem drinking in a large national sample of U.S. women. This study has been
funded continuously since 1980 by the National Institute on Alcohol Abuse and Alcoholism/
National Institutes of Health. The second project, also funded by NIAAA/NIH, is a
multinational study of gender, alcohol, and culture that presently includes more than 40 countries
in Africa, Asia, Latin America, Europe, North America, and Australia. The high-speed
performance that is characteristic of international Internet 2 connections would greatly facilitate
our UND team's video communication with our research collaborators throughout the world, as
well as supporting our need for frequent videoconferencing with members of our U.S. project
team who are located in Texas and California.

If you need any additional information about either of these projects and our national and
international communication needs, please let me know. Best wishes for success in obtaining
funding for the HCREN network, which will greatly enhance the health care, research, and
education missions of our institution.

Sincerely,

Sharon C. Wilsnack, Ph.D.
Chester Fritz Distinguished Professor

THE NATION'S LEADER
IN RURAL HEALTH

Mercy
Medical Center

2007 May 03

Don Larson
Computer Services
University of North Dakota
School of Medicine and Health Sciences
501 North Columbia Road Stop 9037
Grand Forks ND 58202

RE: FCC Rural Pilot Program Grant Application

Don –
I wish to extend my support for your proposed grant application to construct a high speed data network connecting the UND School of Medicine with rural healthcare facilities in North Dakota.

As we have discussed in the past, the challenges of delivering healthcare services in the rural setting of North Dakota are many. As technology professionals, any opportunity we have to enhance the delivery of these services to the population we serve must be strongly considered. As always, funding is a significant challenge, and I applaud your approach to seek grant funds for this proposal.
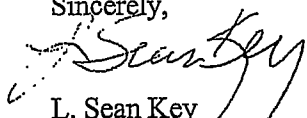
I have been pleased with the successful implementation of the DSL data circuit installed at Mercy Medical Center in Williston, which enables the UND School of Medicine ROME students to gain experience in an actual hospital setting while maintaining appropriate communication and live progress reports with their instructors in Grand Forks.

I expect the high speed network to be constructed as outlined in this proposal to further enhance that capability, while also enabling many additional healthcare services to be established and research to be conducted. Not only will physicians in training benefit, the participating hospitals, and as a result the populations we serve, will benefit as well.

Once technology solutions for healthcare have been implemented, one of the challenges is to maintain the functionality of those solutions. Oftentimes, this gets overlooked. Because of cost, redundancy is frequently not built into these systems, and a single point of failure can cause disruption to an entire service. I anticipate that the Health Care Research and Education Network being proposed will enable hospitals like Mercy to utilize this technology to add much needed redundancy.

I look forward to the opportunity to work with you, and lend my wholehearted support to your project.

Sincerely,

L. Sean Key
Director of Information Technology
Mercy Medical Center
1301 15th Avenue West

Appendix D

References

REFERENCES

1. Bureau of Labor Statistics, U.S. Department of Labor. Retrieved December 2006, from http://www.bls.gov/emp

2. National Center for Health Workforce Analysis, 2003. HRSA state health workforce profiles. Rockville, MD: U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions.

3. IOM (Institute of Medicine) 2005. *Quality Through Collaboration: The Future of Rural Health,* pg. 78. Washington, D.C: National Academies Press.

4. New York Center for Health Workforce Studies, 2006. *The United States Health Workforce Profile.*

5. Job Service of North Dakota 2004-2014. North Dakota Employment Projections.